

**REMARKS**

The Final Office Action mailed January 30, 2006, has been received and reviewed. The present response is submitted under 37 C.F.R. § 1.114 with a request of continued examination. Claims 1 through 13 are currently pending in the application. Applicants respectfully note that claim 13, newly presented in the Response mailed November 8, 2005, is not noted on the cover sheet of the Final Office Action. However, claim 13 is discussed in the body of the Final Office Action. Applicants respectfully suggest that the Examiner may have made a typographical error on the cover sheet and that claim 13 is currently pending in the application. Claims 1 through 13 stand rejected. Claims 7, 9, and 10 have been cancelled herein. Claims 1, 8, and 13 have been amended herein. New claim 14 has been added. Applicants respectfully request reconsideration of the application in light of the remarks and amendments presented herein.

**Information Disclosure Statement(s)**

Applicants note the filing of an Information Disclosure Statement herein on February 2, 2006. Because the Information Disclosure Statement crossed in the mail with the Final Office Action mailed January 30, 2006, and therefore technically was filed after the mailing date of a final office action, Applicants resubmitted the Information Disclosure Statement on February 8, 2006, with the required fee of \$180.00. Applicants respectfully request that the information cited in the Information Disclosure Statement and Form PTO/SB/08 be made of record herein.

**35 U.S.C. § 103(a) Obviousness Rejections**

Obviousness Rejection Based on U.S. Patent No. 5,280,706 to Yorgason in View of U.S. Patent No. 4,643,940 to Shaw et al.

Claims 1 through 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yorgason (U.S. Patent No. 5,280,706) in view of Shaw et al. (U.S. Patent No. 4,643,940). Applicants note that claims 7, 9, and 10 have been cancelled herein rendering the rejection of those claims moot. Applicants respectfully traverse the rejection of claims 1-6, 8, and 11-13 as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejections of claims 1-13 are improper as Yorgason and Shaw do not teach each and every element of claims.

Yorgason teaches a composite/metal hybrid rocket motor case that includes a metal shell with a fiber reinforcement. Yorgason at column 1, lines 13-16. The fiber reinforcement is applied to the metal shell, cured, and bonded. *Id.* at column 4, lines 27-42. The fiber reinforcement is a cylindrical liner formed from sheets of a continuous, unidirectional fiber reinforcement bonded with a thermoset or thermoplastic matrix. *Id.* at column 3, lines 39-46.

Shaw teaches a low density, fiber-reinforced resin composite that includes a thermoplastic resin and short reinforcing fibers. Shaw at column 1, lines 41-43. The density of the resin composite depends on the thermoplastic resin and the fibers that are used. *Id.* at column 2, lines 34-39. The resin composite also has a "high void volume" wherein from about 20 to about 90 percent of the volume of the composite is air space. *Id.* at column 2, lines 18-30. When the resin composite includes a polyolefin matrix and glass fibers, the resin composite has a density of from 0.24-1.04 g/cc. Further, the density of the resin composite is tied to the loft (*i.e.* percent void volume) of the resin composite. *See, Id.* at column 4, lines 53-58 and at column 1, lines 25-28.

Claims 1 and 13, as amended, recite "wherein the composite article is configured as at least a component of a rocket nozzle." While Yorgason does teach the use of composite materials in a rocket motor case, it does not teach the use of low density composite materials in a rocket nozzle (*see*, Yorgason at column 3, lines 29-40). Further, while Shaw teaches low density composite materials, it does not remedy the above noted lack of teaching in Yorgason. As such, applicants respectfully submit that the combination of Yorgason and Shaw does not teach each

and every element of claims 1 and 13 as amended. Consequently applicants respectfully request that the rejections of claims 1 and 13 under 35 U.S.C. § 103(a) be withdrawn and reconsideration of the same. Further, as claims 2-6, 8, and 11-12 depend directly or indirectly from claim 1, applicants respectfully assert that these claims are at least allowable, *inter alia*, as depending from an allowable base claim.

In regards to claim 8, applicants respectfully submit that the 35 U.S.C. § 103(a) obviousness rejection of claim 8 is improper as Yorgason and Shaw do not teach each and every element of claim 8. Claim 8, as amended, recites “wherein the pre-preg material further comprises a filler material selected from the group consisting of carbon powder, powdered alumina trihydrate, or antimony oxide.” While Shaw teaches the use of silicon dioxide, calcium carbonate, magnesium, oxide, cellulosic fibers, magnesium hydroxide, calcium silicate, and mica, (Shaw at column 4, lines 30-34) it does not teach the use of the fillers recited in claim 8 as amended. Yorgason does not remedy this lack of teaching. As such, applicants respectfully submit that the combination of Yorgason and Shaw does not teach each and every element of claim 8 as amended. Consequently applicants respectfully request that the rejection of claim 8 under 35 U.S.C. § 103(a) be withdrawn and reconsideration of the same.

The 35 U.S.C. § 103(a) obviousness rejections of claims 1-13 are further improper as Yorgason teaches away from procedures outlined in Shaw. M.P.E.P. § 2141.02. Yorgason specifically teaches the release of any air trapped air, such as would be present if the lofting procedures of Shaw were used to lower the density. Yorgason at column 4, lines 32-37 and at column 9, lines 44-49. Thus, Yorgason specifically teaches away from decreasing the density of the composite material by creating void volume as taught by Shaw. Furthermore, with the removal of any trapped air, Yorgason can be said to logically teach the use of high density materials, which is in opposition to the low density materials taught by Shaw. As such, applicants respectfully request that the rejections of claims 1-13 under 35 U.S.C. § 103(a) be withdrawn and reconsideration of the same.

**CONCLUSION**

Claims 1-14 are believed to be in condition for allowance and notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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